

APPENDIX 20. Threats Taxonomy: World Conservation Union – Conservation Measures Partnership classification of direct threats to biodiversity (version 2.0). Despite the label “threats,” the items on this list are not inherently positive or negative for wildlife or habitats. Rather, the list includes and categorizes all *potential* threats to species and natural communities.

Threats	Definition
1. Residential & Commercial Development	Threats from human settlements or other non-agricultural land uses with a substantial footprint
1.1 Housing & Urban Areas	Human cities, towns, and settlements including non-housing development typically integrated with housing
1.2 Commercial & Industrial Areas	Factories and other commercial centers
1.3 Tourism & Recreation Areas	Tourism and recreation sites with a substantial footprint
2. Agriculture & Aquaculture	Threats from farming and ranching as a result of agricultural expansion and intensification, including silviculture, mariculture and aquaculture
2.1 Annual & Perennial Non-Timber Crops	Crops planted for food, fodder, fiber, fuel, or other uses
2.2 Wood & Pulp Plantations	Stands of trees planted for timber outside of natural forests, often with non-native species
2.3 Livestock Farming & Ranching	Domestic terrestrial animals raised in one location on farmed or non-local resources (farming); also domestic or semi-domesticated animals allowed to roam in the wild and supported by natural habitats (ranching)
2.4 Marine & Freshwater Aquaculture	Aquatic animals raised in one location on farmed or non-local resources; also hatchery fish allowed to roam in the wild
3. Energy Production & Mining	Threats from production of nonbiological resources
3.1 Oil & Gas Drilling	Exploring for, developing, and producing petroleum and other liquid hydrocarbons
3.2 Mining & Quarrying	Exploring for, developing, and producing minerals and rocks
3.3 Renewable Energy	Exploring, developing and producing renewable energy
4. Transportation & Service Corridors	Threats from long narrow transport corridors and the vehicles that use them including associated wildlife mortality
4.1 Roads & Railroads	Surface transport on roadways and dedicated tracks
4.2 Utility & Service Lines	Transport of energy & resources
4.3 Shipping Lanes	Transport on and in freshwater and ocean waterways
4.4 Flight Paths	Air and space transport
5. Biological Resource Use	Threats from consumptive use of “wild” biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species
5.1 Hunting and Collecting Terrestrial Animals	Killing or trapping terrestrial wild animals or animal products for commercial, recreation, subsistence, research or cultural purposes, or for control/persecution reasons; includes accidental mortality/bycatch

<u>Threats</u>	<u>Definition</u>
5.2 Gathering Terrestrial Plants	Harvesting plants, fungi, and other non-timber/non-animal products for commercial, recreation, subsistence, research or cultural purposes, or for control reasons
5.3 Logging & Wood Harvesting	Harvesting trees and other woody vegetation for timber, fiber, or fuel
5.4 Fishing & Harvesting Aquatic Resources	Harvesting aquatic wild animals or plants for commercial, recreation, subsistence, research, or cultural purposes, or for control/persecution reasons; includes accidental mortality/bycatch
6. Human Intrusions & Disturbance	Threats from human activities that alter, destroy and disturb habitats and species associated with non-consumptive uses of biological resources
6.1 Recreational Activities	People spending time in nature or traveling in vehicles outside of established transport corridors, usually for recreational reasons
6.2 War, Civil Unrest & Military Exercises	Actions by formal or paramilitary forces without a permanent footprint
6.3 Work & Other Activities	People spending time in or traveling in natural environments for reasons other than recreation, military activities, or research
7. Natural Systems Modification	Threats from actions that convert or degrade habitat in service of “managing” natural or semi-natural systems, often to improve human welfare
7.1 Fire & Fire Suppression	Suppression or increase in fire frequency and/or intensity outside of its natural range of variation
7.2 Dams & Water Management/Use	Changing water flow patterns from their natural range of variation either deliberately or as a result of other activities
7.3 Other Ecosystem Modifications	Other actions that convert or degrade habitat in service of “managing” natural systems to improve human welfare
7.4 Removing/Reducing Human Maintenance	Absence or reduction of current or historical maintenance regimes important for key ecological attributes. Includes regimes historically maintained by protected area staff, farmers and ranchers, indigenous peoples, private landowners, or any other resource manager
8. Invasive & Other Problematic Species & Genes	Threats from non-native and native plants, animals, pathogens/microbes, or genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread and/or increase in abundance
8.1 Invasive Non-Native/Alien Species	Harmful plants, animals, pathogens and other microbes not originally found within the ecosystem(s) in question and directly or indirectly introduced and spread into it by human activities (e.g. household pets, zebra mussels, purple loosestrife)
8.2 Problematic Native Species	Harmful plants, animals, or pathogens and other microbes that are originally found within the ecosystem(s) in question, but have become 'out-of-balance' or 'released' directly or indirectly due to human activities
8.3 Introduced Genetic Material	Human altered or transported organisms or genes

Threats	Definition
8.4 Pathogens & Microbes	Harmful native and non-native agents that cause disease or illness to a host, including bacteria, viruses, prions, fungi, and other microorganisms (e.g. Chytrid fungus, Dutch Elm Disease, Chronic Wasting Disease)
9. Pollution	Threats from introduction of exotic and/or excess materials or energy from point and nonpoint sources
9.1 Household Sewage & Urban Waste Water	Water-borne sewage and non-point runoff from housing and urban areas that include nutrients, toxic chemicals and/or sediments
9.2 Industrial & Military Effluents	Water-borne pollutants from industrial and military sources including mining, energy production, and other resource extraction industries that include nutrients, toxic chemicals and/or sediments
9.3 Agricultural & Forestry Effluents	Water-borne pollutants from agricultural, silvicultural, and aquaculture systems that include nutrients, toxic chemicals and/or sediments including the effects of these pollutants on the site where they are applied
9.4 Garbage & Solid Waste	Rubbish and other solid materials including those that entangle wildlife
9.5 Air-Borne Pollutants	Atmospheric pollutants from point and nonpoint sources
9.6 Excess Energy	Inputs of heat, sound, or light that disturb wildlife or ecosystems
10. Geological Events	Threats from catastrophic geological events
10.1 Volcanoes	Volcanic events
10.2 Earthquakes/Tsunamis	Earthquakes and associated events
10.3 Avalanches/Landslides	Avalanches or landslides
11. Climate Change	Threats from long-term climatic changes which may be linked to global warming and other severe climatic/weather events that are outside of the natural range of variation, or potentially can wipe out a vulnerable species or habitat
11.1 Ecosystem Encroachment	Large-scale effects of ecosystems shifting and impinging on other species and ecosystems.
11.2 Changes in Geochemical Regimes	Broad-scale changes in the geochemical conditions of ecosystems including ocean acidification (e.g. changes in atmospheric CO ₂ affecting plant growth, loss of sediment leading to broad-scale subsidence)
11.3 Changes in Temperature Regimes	Broad-scale changes in temperature mean, variability, seasonality, and extremes, including changes in temperature extremes, increased average summer temperature, and decreased minimum winter/spring temperature
11.4 Changes in Precipitation & Broad-Scale Hydrological Regimes	Broad-scale changes in precipitation mean, variability, seasonality, and extremes, including decreased or increased precipitation, changes in timing of precipitation, changes in form of precipitation (e.g., snow vs rain; snowcover and snowpack where applicable), changes in evapotranspiration rates and hydrological cycles, and droughts and floods (e.g. droughts, changes in timing of rains, increased severity of floods, loss of snowcover)
11.5 Severe/Extreme Weather Events	Changes in frequency, timing and/or intensity of storms as well as severe weather events that threaten targets that have lost resilience